

MODULE SPECIFICATION

Code: USSJRU-30-1 **Title:** Human Biological Systems **Version:** 1

Level: 1 **UWE credit rating:** 30 **ECTS credit rating:** 15

Module type: Standard

Owning Faculty: Health and Life Sciences

Field: Applied Sciences

Faculty Committee approval: Quality and Standards Committee

Date: March 2011

Approved for Delivery by: N/A

Valid from: September 2011

Discontinued from:

Pre-requisites:

None

Co-requisites:

None

Entry Requirements:

N/A

Excluded Combinations:

None

Learning Outcomes:

The student will be able to:

- describe the structure and function of the main systems of the human body;
- describe the coordinated biological processes which support human life; and at a basic level, the effects of hormones/drugs on human biological processes;
- demonstrate an understanding of the relationship between tissue structure and function in the human body;
- describe the structure of biological membranes and explain key concepts in membrane transport;
- describe the ultrastructure and function of eukaryotic cells, and their organelles, in contrast to prokaryotic cells;
- describe the key properties and functions of the principal cellular macromolecules and understand how they are synthesised and metabolised;
- understand the organisation, structure, regulation and expression of the genetic material of the cell;
- explain how genetic material can be altered by natural and manipulated means;
- describe the modes of inheritance of characteristics and explain the mechanisms of evolutionary change;
- demonstrate practical skills in data observation, collection, handling and report writing.

Syllabus Outline:

- An examination of the organisation of the human body, including appreciation of the location, structure and function of the major organs and systems and the contribution of cells and tissues to the whole.
- Homeostasis and biological processes which support life.
- Communication between cells/tissues/organs: including an introduction to signalling and receptors, endocrine control, nervous control and synapses.
- Structure and function of cell membranes.
- Structure and function of generalised prokaryotic and eukaryotic cells.
- Amino acids and proteins: properties of amino acids; primary, secondary, tertiary and quaternary structure of proteins.
- Carbohydrates. Monosaccharides. Glycosidic bonds. Structures of some storage and structural

polysaccharides.

- Lipids. Fatty acids, glycerol, sterols as components of lipid structure. Phospholipids and their role in membrane structure.
- General metabolic overview and an introduction to the biochemical processes of the cell, with illustrative examples of catabolic and anabolic pathways.
- The genetic material and genomes. DNA photocopying - the replication of DNA. Decoding the messages within the genes - gene expression: transcription, RNA processing and translation. Altering the genetic material - mutation, recombination and gene cloning.
- Mutations, genetic variation and the idea of selection pressure, introduction to Hardy-Weinberg equilibrium.
- Gene inheritance patterns in humans and introduction to population genetics.

Teaching and Learning Methods:

The theoretical material will be delivered mostly as lectures reinforced by directed reading, practical activities and directed tasks. The practical work will support and extend lecture material, and will include simulation workshops and data interpretation. Tutorials and learning support will be offered at key times. Online resources will support the module. It will provide access to course documents, sample exam questions and other learning materials.

Reading Strategy:

All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

Indicative Reading List:

Most recent edition of:

Alberts B *et al.*, Essential Cell Biology, Garland Science

Godfrey H; Understanding The Human Body Elsevier

Nelson D and Cox M, Principles of Biochemistry, WH Freeman

Russell PJ. Genetics. iGenetics A Molecular Approach, Pearson Ed. Inc. USA

Stanfield CL Principles of Human Physiology. Fourth Edition. Pearson Education Ltd.

Silverthorn D Human Physiology an Integrated Approach. Fifth edition. Pearson Education Ltd.

Tortora GJ and Derrickson B Essentials of Anatomy and Physiology. Eighth edition. Wiley.

Assessment:

Weighting between components A and B (standard modules only) A: 40% B: 60%

FIRST ATTEMPT

First Assessment Opportunity

Component A (*controlled*)

Description of each element

EX1 1.5 hour examination Assessment Period 1

EX2 1.5 hour examination Assessment Period 2

Element Wt (Ratio)

(*within Component*)

1

Final Assessment 1

Component B

Description of each element

- CW1 Portfolio - practical report, data interpretation
CW2 Portfolio - in class assessments

Element Wt (Ratio)

(within Component)

1
1

Second Assessment Opportunity (Resit) further attendance at taught classes is not required

Component A (controlled)

Description of each element

- EX3 3 hour examination

Element Wt (Ratio)

(within Component)

Final Assessment 1

Component B

Description of each element

- CW3 Portfolio - practical report, data interpretation and written task

Element Wt (Ratio)

(within Component)

1

EXCEPTIONAL SECOND ATTEMPT Attendance at taught classes is not required.

Specification confirmed by**Date**
(Associate Dean/Programme Director)